

REMARKS/ARGUMENTS

Claims 13-23 have been cancelled and claims 24-34 are new. Support for the new claims is found throughout the specification, including the figures. For example, support for new Claim 24 is found in FIG. 1 as a method of manufacturing metal slurry. Support for new Claim 25 is found in FIG. 8. Support for new Claim 26 is found in FIGS. 1 and 8. Support for new Claim 29 is found in FIG. 4. Support for new Claim 30 is found in FIG. 1 as a system for production of an ingot. New Claim 31 recites a system for production of a metal plate, which is based on the embodiment of FIG. 1 and modified according to the description on page 21, lines 4-6 of the specification. New Claim 32 is supported by FIG. 4 as a system for production of an ingot, and new Claim 33 recites the invention shown in FIG. 8 as a system for production of an ingot. No new matter has been entered.

As will be noted by a review of the new claims, they are related in that they discuss vibrating a cooling body or a cooled mold in an initial stage of crystallization to liberate crystals from a surface, as explained at, e.g., specification page 4, lines 5-29; page 7, line 29 to page 8, line 2; page 9, lines 24-27; page 15, lines 3-6; and page 18, lines 4-11.

The prior rejection over Adachi ('473) should not be repeated against the new claims. First, in the present invention the cooling plate is cooled to generate crystals. In Adachi, the inclined cooling body is cooled to generate crystal nuclei instead of crystals. Secondly, in the present invention the cooling plate is forcibly vibrated to liberate or separate crystals from the surface of the cooling plate. In Adachi, the cooling plate is vibrated to promote generation of crystal nuclei. These differences are attributable to differences in the purposes of the references which, in the case of Adachi, is the production of spherical crystals (i.e., spheroidizing the crystal structure).

More specifically, Adachi produces crystal nuclei (instead of crystals) by cooling a molten metal on an inclined cooling plate and vibrating the cooling plate to promote generation of crystal nuclei. In contrast, the present invention cools a molten metal on, for example, a tilted cooling plate to produce crystals (not crystal nuclei) on the surface of the tilted cooling plate, and vibrates the tilted cooling plate to liberate the crystals from the cooling plate in an initial stage of formation of crystals before the crystals grow too large or adhere to the surface of the cooling body. These differences have been clarified in the new claims, submitted herewith.

Adachi teaches generating crystal nuclei in the molten metal on the inclined cooling plate and then feeding the "semisolid alloy" containing a large number of crystal nuclei into an insulated vessel (e.g., claim 1 and column 4, lines 41-60). The semisolid alloy introduced into the insulated vessel contains crystal nuclei instead of crystals, and crystal nuclei are grown to crystals only in the insulated ceramic vessel 30 while being held therein for 5 seconds to 60 minutes (e.g., column 4, lines 51-52, column 18, lines 11-17). An insulated (ceramic) vessel 30 is used so that the molten metal held in the vessel will cool slowly at a cooling rate even slower than by air-cooling See, e.g., Figs. 3 and 4 of Adachi, steps 3-a, 3-b, 3-c; column 18, lines 37-62). From these teachings it is clear that the intended purpose of the vibration in Adachi is to generate crystal nuclei (not crystals) in the molten metal.

This process is absolutely different from the processes presently claimed, in which crystals (not crystal nuclei) are generated when cooled by contact of the molten metal with the cooled surface of the tilted cooling body. As such, in the present invention, crystals are formed on the surface of the cooling body and these crystals are liberated from the surface of the cooling body by vibration in an initial stage of crystallization.

As discussed above, the present invention is quite different from Adachi in its use of a cooling plate to generate crystals of a molten metal on the surface thereof and the use of

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vibration to liberate the crystals from the surface of the cooling plate in an initial stage of crystallization. Adachi on the other hand uses a cooling plate for the purpose of generating crystal nuclei and vibrates the cooling plate for promoting the generation of crystal nuclei. In view of these distinct differences Adachi '473 should not be applied against the newly submitted claims, which define patentable subject matter.

Respectfully submitted,

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